

An Investigation of Differences Between Self-Injurious Behavior and Suicide Attempts in a Sample of Adolescents

JENNIFER J. MUEHLENKAMP, MA, AND PETER M. GUTIERREZ, PhD

Data from 390 high school students were collected to examine potential differences between adolescents who had attempted suicide and those who engaged in self-injurious behavior on measures of depression, suicidal ideation, and attitudes toward life and death. Significant differences were found between controls and the self-harm groups on all dependent variables. A significant difference on attitudes toward life was found between the self-injury and suicide attempt groups. Post-hoc regression analyses showed that measures of depression, suicide ideation, and attitudes towards life predicted participants' self-harm categorization. These findings provide preliminary evidence that self-injurious behavior is different from attempted suicide among a community sample of adolescents.

Self-injury, the deliberate destruction or alteration of body tissue without suicidal intent, among adolescents is not a new phenomenon and may be quite common. Estimates of self-injurious behavior among adolescents range from 5.1% to over 40% (Darche, 1990; Patton et al., 1997; Ross & Heath, 2002), and there is some evidence that the behavior is increasing (Hawton, Fagg, Simkin, Bale, & Bond, 1997). Despite the apparent prevalence of self-injurious behavior (SIB) among adolescents, very little is known about the behavior. Part of the

difficulty in understanding SIB is due to the multiple terms used to describe the behavior and the confusion surrounding whether or not SIB represents a suicide attempt (O'Carroll et al., 1996).

A number of clinicians and researchers support a distinction between SIB and suicide attempts, with some proposing that SIB exists as its own clinical syndrome (Favazza, 1996; Favazza & Rosenthal, 1993; Kahan & Pattison, 1984; Pattison & Kahan, 1983) because it is qualitatively different in terms of the lethality, intent, and general characteristics of the behavior. Research has found that individuals who engage in SIB make a cognitive distinction between SIB and suicide (Favazza, 1996; Favazza & Conterio, 1989; Walsh & Rosen, 1988). Many who self-injure report having no suicidal thoughts prior to or during the self-injury and they report using SIB as a coping strategy, but do not intend to die from their self-injury (Favazza, 1998; Simeon & Favazza, 2001).

However, approximately 28% to 41% of those who self-injure report having suicidal ideation at some point (Favazza, 1996; Pattison & Kahan, 1983), and it is also estimated

JENNIFER J. MUEHLENKAMP and PETER M. GUTIERREZ are with Northern Illinois University.

Address correspondence to Jennifer J. Muehlenkamp, Department of Psychology, 1425 W. Lincoln Hwy., Northern Illinois University, DeKalb, IL 60115-2892 or via email at: jjwrangh-am@hotmail.com.

We would like to thank Dale Collura, MA, the teachers, and other personnel at the high school from which this data was collected for their assistance, support, and commitment to our study. Analyses of other data sets from this project have been previously published (see Valentiner, Gutierrez, & Blacker, 2002, and Deacon, Valentiner, Gutierrez, & Blacker, 2002).

that roughly 55% to 85% have a history of at least one suicide attempt (Stanley, Winchel, Molcho, Simeon, & Stanley, 1992), although the suicide attempt often employs a different method than what is used for self-injury (Favazza & Rosenthal, 1993; Stanley, Gameroff, Venezia, & Mann, 2001). Therefore, some argue that all self-injury should be considered along a continuum of lethality and that it is irrelevant to make distinctions between SIB and suicide attempts (Linehan, 2000; Stanley et al., 1992). Unfortunately, there is little empirical evidence to support either side of the issue. Most of the research to date regarding the uniqueness of SIB from suicide has been descriptive, making it difficult for researchers and clinicians to quantitatively differentiate suicide from self-injury. In addition, a majority of the studies on SIB have been conducted with samples of adult inpatients, so information regarding the independence of SIB and suicide in adolescent populations is unknown.

The argument that appears to be offered most frequently in support of the distinction between suicide and SIB is that individuals who engage in SIB are doing so to manage distress and to feel better, whereas those who attempt suicide are trying to remove themselves from their current life. In simple terms, it is assumed that SIB is conducted with a motivation to live and suicide is associated with a motivation to cease living. Based on this logic, one could argue that individuals who engage in SIB are still attracted to life but have adopted a morbid and dysfunctional coping strategy; by contrast, individuals who attempt suicide are repulsed by life and view suicide (i.e., death) as the solution to life difficulties.

Orbach and colleagues (1991) developed the Multi-Attitude Suicide Tendency Scale (MAST) to assess attraction to and repulsion by life and death in an attempt to better describe the multidimensional nature of suicidal behavior. Research with this scale suggests that suicidal individuals differ in their attitudes toward life and death compared to nonsuicidal individuals. In a sample of adolescent inpatients and high school students, Cotton and Range (1996) found that suicidality

was positively associated with repulsion by life, attraction to death, and negatively related to attraction to life. Gutierrez, Osman, Kopper, Barrios, and Bagge (2000) found that attitudes about life and death differentiated between college students who exhibited low and high risk of suicidal behavior (see also Gutierrez, King, & Ghaziuddin, 1996; Osman et al., 2000). Interestingly, attitudes toward life and death have not been assessed among individuals who self-injure. Given the qualitative differences between suicide and SIB as cited in the literature, it is possible that differences in life and death attitudes may exist between those who attempt suicide and those who engage in SIB.

In addition to questions regarding differences in suicidal ideation and intent between suicide attempts and SIB, there is some question as to what role depression may play in SIB. A clear link has been established between suicide and depression. It is well known that adolescents with high levels of depressive symptomatology are at greater risk for suicide (Lewinsohn, Rhode, & Seeley, 1996). If we knew what role depression played in SIB, we might be able to better understand the behavior and possibly differentiate it from suicide.

It appears that only three studies have tested an association between depression and SIB among adolescents. Darche (1990) compared 48 inpatient self-injuring adolescents with 48 inpatient controls finding that the adolescents who self-injured had significantly higher mean depression scores than those who did not self-injure. Although this study provides some initial data regarding depressive symptoms and SIB, the sample consisted of only inpatient adolescents, so the findings may not generalize. Additionally, the author did not look for differences in depressive symptoms between those with a history of a suicide attempt and those who self-injure. Similar results were obtained by Martin, Rozanes, Pearce, and Allison (1995), who found that SIB was associated with higher depression scores in a sample of 352 adolescents; however, they included suicide attempts in their definition of SIB, confounding their results. In a study of the frequency of SIB among high school adolescents, Ross and Heath (2002)

found that those who had engaged in SIB reported significantly more depressive symptoms as measured by the Beck Depression Inventory (BDI) compared to those who did not self-injure. The authors concluded that level of depressive symptomology may differentiate self-injuring from non-injuring adolescents, but they did not directly test this conclusion. Although these findings are important to our general understanding of SIB, they do not enhance our knowledge regarding the role depression may play in SIB. The authors also failed to examine whether the level of depressive symptomology could differentiate individuals who attempt suicide from those who engage in SIB.

One purpose of the current study was to provide some descriptive data on SIB among high school adolescents. The second purpose was to determine whether adolescents who had attempted suicide differ from those who only engaged in self-injurious behavior on measures of suicidal ideation, depressive symptomology, and attitudes toward life and death.

METHOD

Participants and Procedures

Participants were recruited as part of an ongoing study being conducted at an urban public high school in the Midwest. All students at the school are invited to participate (population of 1,200), but the freshman class is most heavily recruited each year (average size = 400). The current project analyzed data from 390 high school students (176 males, 214 females) collected during the first 2 years (1998–2000) of the study. The mean age of the participants was 16.27 ($SD = 1.37$). Caucasian students comprised 62.2% of the sample, 15.2% were African American, 7.7% identified as Hispanic, and 14.9% selected “other” for their ethnicity. Participants were recruited through classroom announcements and letters that were sent to students’ homes. Students with parental consent who also gave their assent to participate completed a demographic questionnaire and packet of self-report measures

in small groups, within semi-private rooms in the library of the school. The questionnaires were counterbalanced within each packet with the exception of the demographic form, which always occurred first. Upon completion of the packet, students’ questionnaires were examined for indicators of suicide risk or depression. Those requiring individual follow-up were given an appropriate referral. It took approximately 50 minutes for students to complete the packet of questionnaires.

Measures

Suicidal Ideation Questionnaire (SIQ; Reynolds, 1988). The SIQ is a 30-item self-report measure of adolescents’ current level of suicidal ideation. Items are rated according to a 7-point scale from 6 (*almost every day*) to 0 (*I never had this thought*), with scores ranging from 0 to 180. The SIQ has demonstrated good internal consistency (Pinto, Whisman, & McCoy, 1997; Reynolds, 1988) and adequate concurrent and construct validity. The SIQ-JR, an abbreviated 15-item version of the SIQ, was administered to freshmen participants (Reynolds, 1988). The SIQ-JR has also demonstrated good internal consistency, with an alpha of .93 (Range & Knott, 1997). Total scores on the measure were transformed into percentile scores, based on tables provided in the manual, so that data from the two versions could be combined during analyses.

Reynolds Adolescent Depression Scale (RADS; Reynolds, 1987). The RADS is a 30-item self-report measure designed to assess depressive symptomology in adolescents. Each item is answered according to a 4-point scale from 1 (*almost never*) to 4 (*most of the time*). The RADS demonstrates good internal consistency (alpha’s ranging from .90 to .96), acceptable test-retest reliability (Davis, 1990), and moderately high item total correlations ($r = .40$ to $r = .70$; Reynolds, 1987). Convergent validity is evidenced by correlations with other measures of depression (Davis, 1990). Results from a short-term (i.e., 5 weeks) longitudinal study with the RADS provided a test-retest reliability of .87 and an overall alpha of .91 (Reynolds & Mazza, 1998). In addition, there were

no gender or grade differences in average scores at either assessment point.

Multi-Attitude Suicide Tendency Scale (MAST; Orbach et al., 1991). The MAST consists of 30 items that were designed to measure attitudes on four different components: attraction to life (AL), attraction to death (AD), repulsion by life (RL), and repulsion by death (RD). Items are answered according to a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The mean item response is calculated to obtain subscale scores, with higher scores indicating greater agreement with the attitude. The MAST has demonstrated acceptable reliability and validity across a number of studies (Orbach et al., 1991; Osman et al., 1994). Internal consistency estimates range from alpha's of .74 to .91 (Osman et al., 1994). In addition, the MAST subscales have been able to significantly distinguish between suicidal and non-suicidal adolescents (Osman et al., 1994).

Self-Harmful Behavior Scale (SHB; Gutierrez, 1998). The SHB is an open-ended, free-response questionnaire developed to assess the degree to which participants have engaged in self-harmful activities. The SHB consists of five general questions designed to assess participants' history of suicidal behavior, followed by a series of free-response questions. If a participant endorsed any of the five general questions, the following free-response items on the measure were completed to provide further information such as the number of times the participant engaged in the behavior, methods used, and age when the behavior occurred. Data from the SHB was used to determine participants' self-harm category as well as to obtain descriptive data regarding any reported self-harm. Participants who responded "yes" to the question asking whether they had ever purposefully harmed themselves and "no" to the question asking whether they had ever attempted suicide were categorized in to the self-injury only group. Participants who responded "yes" to attempting suicide were categorized in to the suicide attempt group.

Responses to follow-up questions inquiring about the methods of self-harm were

coded into pre-defined behaviors of cutting, scratching, burning, self-hitting, punch/kicking, banging, and other, based on descriptions of each behavior by Ross and McKay (1979) and Favazza (1996). Cutting referred to behaviors in which the participant reported deliberately cutting his/her skin (e.g., "cut wrists; traced veins with razor"). Scratching represented behaviors in which the participant reported injuring their skin but it did not result in an actual cut (e.g., "scratched self with safety pin;" scratching one's skin until it was raw). Behaviors in which participants burned themselves with lighters, cigarette butts, matches, or other hot objects were classified under burning. Self-hitting represented actions in which participants reported purposefully hitting themselves with their own hands or objects (e.g., "slapping myself"). Punch/kicking referred to participants' punching or kicking solid objects (e.g., wall) in order to induce pain. Banging referred to acts in which the participant hit a part of his/her body against an object (e.g., banging wrist against counter ledge). Other behaviors that did not fit into one of the above categories were classified as "other" (e.g., hanging, jumping from high places, overdose). Responses were independently coded by two graduate students who obtained excellent inter-rater agreement ($k = .95$). All discrepancies in coding were resolved by consensus. Since the collection of the current data, the SHB has been published (Gutierrez, Osman, Barrios, & Kopper, 2001) with a formal coding system.

RESULTS

Incidence and Description of Self-Harm

Of the original 390 students, 15.9% ($n = 62$) had engaged in only self-injury and 5.6% ($n = 22$) had made a suicide attempt independent of SIB. Of those who indicated they had either self-injured or attempted suicide, 69.7% were female, 68.2% were Caucasian, 7.6% were African American, 3% were Hispanic, and 21.2% indicated "other" for their ethnicity (see Table 1 for group break-

TABLE 1
*Descriptive Data for the Self-Injury
and Suicide Attempt Groups*

Variable	Self-Injury (<i>n</i> = 62) (participants)	Suicide Attempt (<i>n</i> = 22) (participants)
Male	54.8% (34)	27.3% (6)
White	74.2% (46)	63.6% (14)
African American	3.2% (2)	9.1% (2)
Hispanic	6.5% (4)	4.5% (1)
Other	16.1% (10)	22.7% (5)
Cut	46.8% (29)	59.1% (13)
Scratch	27.4% (17)	22.7% (5)
Burn	7.6% (5)	4.5% (1)
Self-Hit	12.1% (8)	4.5% (1)
Punch/Kick	9.1% (6)	4.5% (1)
Bang	4.5% (3)	4.5% (1)
Other Method	15.2% (10)	13.6% (3)
Use of One Method	66.7% (44)	77.3% (17)
Use of Two Methods	19.7% (13)	18.2% (4)
Use of Three or More Methods	3.0% (2)	0.0
Currently Engaged in Behavior	44.8% (26)*	36.4% (8)

*Four participants did not report age of most recent act of SIB.

down). Forty-two percent of the participants who reported engaging in SIB indicated that their most recent act of self-injury was at their current age, and 24% reported their last act of self-injury had been within 1 year of their current age. Of the participants who had attempted suicide, 36% reported their most recent attempt was at their current age and 41% indicated they had attempted within 1 year of their current age. The age of first self-harm ranged from 5 to 17 years old, with most reporting that the self-injury began at age 13 (14.5%), 14 (26.5%), or 15 (16.9%). Of those who reported engaging in only self-injury, 45.2% were female. The most common methods of self-injury were cutting, scratching, and self-hitting (see Table 1). Twenty-two percent of those who engaged in self-injury reported using multiple methods. Of those who reported attempting suicide, 72.7% were fe-

male. The most common methods reported were cutting, followed by scratching, and “other,” which included overdoses, hangings, and jumping from high places (see Table 1). The frequency of self-injury was not assessed in this study.

Group Comparisons

Chi-square analyses indicated that there were no significant differences in gender across the self-injury $\chi^2(1, 62 = 2.241, p > .05)$ or control group $\chi^2(1, 368 = 2.81, p > .05)$. There were significant differences in gender in the suicide attempt group $\chi^2(1, 22 = 4.95, p < .05)$, with significantly more females reporting they had attempted suicide than males. Significant differences were found for ethnicity in the self-injury group $\chi^2(3, 62 = 8.86, p < .05)$; Caucasian students were significantly more likely to self-injure than the African American, Hispanic, and other ethnic students in this sample. There were no significant differences in ethnicity among the students reporting a suicide attempt $\chi^2(3, 22 = 1.92, p > .58)$.

In order to assess whether the three groups differed from each other on the RADS, SIQ, and MAST subscales, univariate Analysis of Variance (ANOVA) was performed. Analyses confirmed that the homogeneity of variance assumption was upheld for all the dependent variables except the SIQ percentile scores (Levene Statistic = 24.73 (2, 359), $p < .001$). As a result, all ANOVAs conducted with the SIQ were calculated assuming unequal variances across the groups. Significant differences were found between the groups on all of the dependent variables except MAST-RD, $F(2, 367) = .459, p > .5$ (see Table 2).

Due to the large number of planned contrasts conducted, the risk of type I error was reduced by considering only those findings associated with a $p < .01$ as statistically significant. A priori planned contrasts showed significant differences between the control group and the self-harm groups on the RADS ($t = 6.07, p < .01$), SIQ ($t = 12.16, p < .01$), MAST-RL ($t = 6.40, p < .01$), MAST-AL ($t = -6.65, p < .01$), and the MAST-AD ($t = 3.65, p < .01$). Students reporting some type of self-harm

TABLE 2
Analysis of Variance Results

Dependent Variable	Mean Square	df	F-Value	Significance
SIQ Percentile Scores	20248.35	2	36.22	.000
RADS Total Score	4302.90	2	18.97	.000
MASTRL	11.78	2	20.55	.000
MASTRL	9.00	2	22.30	.000
MASTRD	0.369	2	0.459	.632
MASTRD	3.43	2	6.67	.001

Note. MASTRL = repulsion by life; MASTAL = attraction to life; MASTRD = repulsion by death; MASTAD = attraction to death; SIQ = Suicide Ideation Questionnaire; RADS = Reynolds Adolescent Depression Scale.

also reported significantly more depressive symptoms and suicidal ideation compared to controls. In addition, these students reported a greater repulsion by life, attraction to death, and a significantly lower attraction to life than did controls. Planned comparisons between the self-injury and suicide attempt groups revealed significant differences on the MAST-RL ($t = 2.62, p < .01$), indicating that individuals who engaged in self-injury were less repulsed by life than individuals who had attempted suicide. No other significant differences were found between these two groups (see Table 3).

Predicting Self-Harm Category

Post-hoc hierarchical linear regression analyses were run to determine which of the dependent variables would best predict students' self-harm category. Due to the high correlation between the SIQ and RADS ($r = .62, p < .01$), they were both entered into the equation at step one. The MAST-RL was entered into the equation at step two, followed by the MAST-AL and MAST-AD at each subsequent step. The MAST-RD was not entered because there were no significant differences between the groups on this variable.

TABLE 3
Results of the Planned Contrasts between the SIB and Suicide Attempt Groups

Variable	Contrast Value	df	t value	P Value
SIQ Percentile*				
SIB vs. Suicide Attempt	6.67	59.21	2.05	.198
RADS Total Score				
SIB vs. Suicide Attempt	6.21	362	1.62	.106
MASTRL				
SIB vs. Suicide Attempt	.50	372	2.62	.009
MASTAL				
SIB vs. Suicide Attempt	.33	374	-2.25	.025
MASTAD				
SIB vs. Suicide Attempt	.29	375	1.61	.108

Note. *ANOVA assumes unequal variances; SIB = self-injury group; SIQ = Suicide Ideation Questionnaire; RADS = Reynolds Adolescent Depression Scale; MASTRL = repulsion by life; MASTAL = attraction to life; MASTAD = attraction to death.

Results indicated that the full model was significant, $F(6, 308) = 12.72, p < .01$; however, the model was not significantly improved upon following step three (see Table 4). It appears that the best predictors of self-harm category for this sample are scores on the SIQ, RADS, MAST-RL, and MAST-AL.

DISCUSSION

The results of the current study suggest that self-injurious behavior is present among high school adolescents and that the behavior is not uncommon. Self-injurious behavior was reported by 15.9% of the students, which is slightly higher than the estimates obtained by other studies of community adolescents and university students (Favazza, DeRosear, & Conterio, 1989; Patton et al., 1997; Ross & Heath, 2002). This finding could indicate that self-injurious behaviors are becoming more common among adolescents, as suggested by Hawton et al. (1997), however, this higher percentage could also be an artifact of our sample. Additional studies with community-based samples of adolescents are needed to determine whether or not the behavior is increasing.

Of those students reporting they had self-injured, a majority reported that they began the SIB between the ages of 13 and 15 years. This finding is consistent with other studies that have found a common starting

age of approximately 14 years (Favazza, 1996; Favazza & Conterio, 1989; Walsh & Rosen, 1988). This finding has important implications for clinicians, high school teachers, and other professionals who work with adolescents because early identification of those who are at risk or who are just beginning to self-injure could help to prevent further repetition and escalation of the behavior. Research suggests that SIB is difficult to treat (Favazza, 1998; Ross & McKay, 1979), especially as the behavior progresses or increases in frequency. Early identification could help connect adolescents with treatment services which could help them develop healthy coping behaviors. High school personnel should be aware of the potential for young adolescents to begin engaging in self-injury so they can intervene.

The most common methods of self-injury reported by the current sample included cutting, scratching, self-hitting, punching/kicking, burning, and banging. This finding is very similar to that found by Ross and Heath (2002) and somewhat consistent with existing research which reports that the most common form of SIB is cutting, followed by burning, self-hitting, interference with wound healing, and extensive self-scratching (Favazza, 1992, 1996; Walsh & Rosen, 1988). In our sample, most students reported using only one method of self-injury, which is similar to findings by Ross and Heath (2002); however, 22.7% of our sample did report using multiple methods. Researchers find that it is common for self-

TABLE 4
Regression Analyses

Model	<i>R</i>	<i>R</i> ² Change	<i>F</i> Change	<i>df</i>	Change in <i>F</i> <i>P</i> -Value	Full Model <i>P</i> -Value
A	.412	.170	31.85	2	.000	.000
B	.430	.015	5.74	1	.017	.000
C	.444	.013	4.97	1	.027	.000
D	.445	.001	.17	1	.675	.000

Note. A = SIQ, RADS; B = SIQ, RADS, MAST-repulsion by life; C = SIQ, RADS, MAST-repulsion by life, MAST-attraction to life; D = SIQ, RADS, MAST-repulsion by life, MAST-attraction to life, MAST-attraction to death.

injurers to report using multiple methods of self-injury (Favazza, 1996; Walsh & Rosen, 1988).

We found no significant gender differences in the SIB group, but there were slightly more males in the self-injury group than females. This result is inconsistent with a majority of previous research. Most studies report finding gender differences in self-injury, with females being more likely to self-injure than males (Favazza & Conterio, 1989; Walsh & Rosen, 1988). However, there is evidence that SIB is increasing among adolescents and it could be that the increase is within males, which would account for the lack of gender difference in our study. Our finding that more males than females reported SIB could also result from our broad inclusion criteria. All descriptions of self-injurious behavior were included in our analyses so behaviors such as "punching a wall," which may be more common in males, were coded as intentional self-injury. Other studies have limited their inclusion criteria to a small range of SIB, focusing on cutting or burning, which may be more common among females. Future research should explore potential sex differences in the methods used for self-injury.

Another potential explanation for earlier findings of sex differences in SIB is that a majority of the early studies were conducted with individuals diagnosed with borderline personality disorder, which is more common among females (APA, 2000). In addition, most studies to date that have assessed SIB in adolescents have utilized adolescent inpatient samples. It is possible that female adolescents who engage in self-injury are more likely to be hospitalized than are males since females' injuries are sometimes taken more seriously than males who can discount minor injuries as a normal part of daily life (Favazza, 1996; Kahan & Pattison, 1984). The current results add to the literature, indicating that sex differences in SIB may not exist among general high school students.

This study also explored potential ethnic differences in self-injury, finding that Caucasian students were significantly more likely

to engage in SIB than non-Caucasian students. Most studies on SIB have failed to examine ethnic differences in self-injury so it is unknown whether this is a common finding. In addition, the small number of individuals within each ethnic group in the current study may have skewed results and should be considered when interpreting the findings. Ross and Heath (2002) reported that most of the students in their sample who engaged in self-injury were Caucasian, however, they did not test to see if this difference was statistically significant. In a study of 95 adolescent inpatients, Guertin, Lloyd-Richardson, and Spirito (2001) found that adolescents who self-injured were significantly more likely to be Caucasian, which is consistent with our findings. Due to the lack of research on ethnic differences in SIB, conclusions are not yet warranted, although, based on the current study and the study by Guertin et al. it would appear that SIB may be more common among Caucasian adolescents. Additional research is needed in this area.

In addition to providing valuable data regarding self-injury within a sample of community-based adolescents, this study assessed whether there were affective and attitudinal differences between adolescents who self-injured and those who attempted suicide. Significant differences between students who had no history of self-harm and students with a history of self-harm (i.e., either self-injury or suicide attempt) were found on measures of suicidal ideation and depressive symptomology. This finding is expected since individuals who engage in self-harm often report more distress and tend to experience more psychological dysfunction than individuals who do not engage in self-harmful behaviors (Favazza et al., 1989; Guertin et al., 2001; Martin et al., 1995; Walsh & Rosen, 1988). Significant differences were also found between the no-self-harm and self-harm groups on attitudes toward life and death. Specifically, it was found that the no-self-harm group reported significantly less repulsion by life, less attraction to death, and a significantly greater attraction to life than the self-harm groups. This finding is

consistent with the idea that individuals who do not have a history of self-harm are more likely to be psychologically healthy, happy, and functioning well in their life. Thus, it is expected that these individuals would be more satisfied with and have positive attitudes regarding their life.

Comparisons between the self-injury group and the suicide attempt group failed to find significant differences in suicide ideation and depressive symptoms. These results add to the existing literature, which has found mixed results regarding differences in suicidal ideation and depressive symptoms. Most studies find that suicidal ideation during self-injury is low or nonexistent (Walsh & Rosen, 1988); however, others have found that individuals who engage in self-injury report suicidal ideation at some point (Favazza, 1996; Pattison & Kahan, 1983). As a result, it becomes difficult to determine whether an act of self-injury is just SIB or a suicide attempt on the basis of suicidal ideation alone. In addition, research has clearly demonstrated that suicidal ideation is quite common among adolescents (Grunbaum et al., 2002), suggesting that suicidal ideation may not be a reliable variable to use for differentiating SIB from suicide.

In terms of depressive symptomology, the current results are consistent with previous research in that the students with a history of self-harm had significantly higher levels of depressive symptomology than those with no self-harm. Of the three known studies that assessed depression levels and self-injurious behavior within adolescent samples, all have found that adolescents who engage in SIB report significantly more depressive symptoms than those who do not self-injure (Darche, 1990; Martin, et al., 1995; Ross & Heath, 2002); however, no known study to date has assessed differences in depressive symptoms between those who only engaged in self-injury and those who have attempted suicide. The current study found no significant differences in depressive symptoms between these two groups. These findings suggest that the level of depressive symptoms does not differ among self-injurers and suicide attempters. It may be that both groups are experiencing high levels

of distress and that the self-harm is in response to these overwhelming feelings and functions as a coping response.

The difference between the choice to self-injure or attempt suicide may be more subtle than what can be detected by depression scores or suicide ideation scores. Self-injurious behavior is viewed as phenomenologically distinct from suicide in that SIB is seen as a life preserving action or as an attempt to avert suicide. A suicide attempt, by definition, is seen as an action to end life. Thus, the subtle difference between the two behaviors may be due to differences in the individual's attitude toward life or death. Results from the current study partially support this hypothesis. Significant differences were found between the suicide attempt and self-injury groups on the MAST-RL with the self-injury group reporting less repulsion by life. Repulsion by life represents a negative attitude toward life and assesses the amount of painful experiences a person has encountered. The difference suggests that individuals who self-injure may not have had as many negative experiences as those who attempt suicide and, therefore, do not have as negative an attitude toward life. Having fewer negative experiences and a more positive attitude toward life may prevent self-injurers from attempting suicide.

As a post-hoc analysis, we were interested in determining which measures would best predict students' self-harm category (i.e., SIB only, suicide attempt, no self-harm). Results of the regression analyses indicate that the best predictors were the SIQ, RADS, MAST-RL, and MAST-AI measures of suicidal ideation, depressive symptoms, and attitudes toward life. Although measures of suicidal ideation and depressive symptoms appear unable to differentiate suicidal and self-injuring adolescents in this sample, they are able to determine whether or not the adolescent is in a self-harming category. In addition, the results provide evidence that the difference between SIB and suicide attempts is subtle and potentially based in the person's attitude toward life. Both the MAST-RL and MAST-AL subscales were found to be significant predictors of self-harm, even after con-

trolling for the effects of depression and suicidal ideation. It is possible that the decision of whether to engage in SIB or attempt suicide when confronted with risk factors such as depression and suicide ideation may be motivated by the individual's attitudes toward life, with more positive attitudes underlying a decision to engage in SIB over suicide. Future studies should continue to explore this issue.

The present study offers valuable information regarding self-injurious behaviors among adolescents. Few studies exist that have examined SIB within community samples of adolescents, thus this study contributes to the current knowledge of self-injury. In addition, this is the first known study that has attempted to empirically differentiate self-injury from suicide using groups of "only self-injury" and "only suicide attempts." Other studies that have looked at differences between SIB and suicide attempts have compared individuals with a history of suicide attempts that have and have not self-injured. Another strength of the current study is that it assessed adolescents' history of self-harm and did not limit reports of self-harm to the past year, which is somewhat common. By allowing participants to report on incidents of self-harm over their lifetime we were able to obtain a more accurate picture of the prevalence of SIB and suicide attempts in these adolescents' lives.

In addition to the strengths of the current study, a number of limitations should be mentioned. The first is that the data is all self-report and retrospective in nature regarding

history of self-harm. A small portion of the participants who reported engaging in self-harmful behavior did so many years ago and were not currently self-injuring, thus some scores on the RADS, SIQ, and MAST did not reflect the adolescents' psychological state within a close time-period to their SIB. In addition, the self-report nature of the study limited the follow-up data that could be collected regarding self-harm, which prevented clarification of ambiguous responses to the Self-Harmful Behavior Scale (Gutierrez, 1998). Finally, data regarding the function of SIB, other affective experiences (e.g., anxiety, anger, loneliness), psychiatric history, abuse history, and family functioning were not assessed, all of which have been associated with self-injurious behavior (Favazza, 1996; Walsh & Rosen, 1988). Research exploring these additional variables is encouraged.

CONCLUSION

Based on our findings, it can be concluded that self-injurious behavior is prevalent among a community-based sample of adolescents and that the characteristic features of SIB are consistent across community and psychiatric populations. In addition, it appears that the distinction between self-injurious behaviors and suicide attempts can be assessed empirically, although it is difficult to measure and may be more subtle than originally thought.

REFERENCES

- AMERICAN PSYCHIATRIC ASSOCIATION. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., Rev.). Washington, DC: Author.
- COTTON, C. R., & RANGE, L. M. (1996). Suicidality, hopelessness, and attitudes toward life and death in clinical and nonclinical adolescents. *Death Studies*, 20, 601-610.
- DARCHIE, M. A. (1990). Psychological factors differentiating self-mutilating and non-self-mutilating adolescent inpatient females. *The Psychiatric Hospital*, 21, 31-35.
- DAVIS, N.L.F. (1990). The Reynolds Adolescent Depression Scale. *Measurement and Evaluation in Counseling and Development*, 23, 88-91.
- DEACON B. J., VALENTINER, D. P., GUTIERREZ, P. M., & BLACKER, D. (2002). The anxiety sensitivity index for children: Factor structure and relation to panic symptoms in an adolescent sample. *Behavior Research and Therapy*, 40, 839-852.
- FAVAZZA, A. R. (1996). *Bodies under siege: Self-mutilation and body modification in culture and psychiatry* (2nd ed.). Baltimore, MD: John Hopkins.
- FAVAZZA, A. R. (1998). The coming of age of self-mutilation. *The Journal of Nervous and Mental Disease*, 186, 259-268.
- FAVAZZA, A. R., & CONTERIO, K. (1989). Female habitual self-mutilators. *Acta Psychiatrica Scandinavica*, 79, 238-289.

- FAVAZZA, A. R., DE ROSEAR, L., & CONFERRIO, K. (1989). Self-mutilation and eating disorders. *Suicide and Life-Threatening Behavior*, 19, 352–361.
- FAVAZZA, A. R., & ROSENTHAL, R. J. (1993). Diagnostic issues in self-mutilation. *Hospital and Community Psychiatry*, 44, 134–140.
- GRUNBAUM, J. A., KANN, L., KINCHIEN, S. A., WILLIAMS, B., ROSS, J. G., LOWRY, R., & KOLBE, L. (2002). Youth risk behavior surveillance—United States, 2001. *Morbidity and Mortality Weekly Reports*, 51, 1–66.
- GUERTIN, T., LLOYD-RICHARDSON, E., & SPIRITO, A. (2001). Self-mutilative behavior in adolescents who attempt suicide by overdose. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40, 1062–1069.
- GUTIERREZ, P. M. (1998). *Self-Harm Behavior Questionnaire (SHBQ)*. Unpublished manuscript, Northern Illinois University, DeKalb.
- GUTIERREZ, P., KING, C. A., & GHIAZUD-DIN, N. (1996). Adolescent attitudes about death in relation to suicidality. *Suicide and Life-Threatening Behavior*, 26, 8–18.
- GUTIERREZ, P. M., OSMAN, A., BARRIOS, F. X., & KOPPER, B. A. (2001). Development and initial validation of the Self-Harm Behavior Questionnaire. *Journal of Personality Assessment*, 77, 475–490.
- GUTIERREZ, P. M., OSMAN, A., KOPPER, B. A., BARRIOS, F. X., & BAGGE, C. L. (2000). Suicide risk assessment in a college student population. *Journal of Counseling Psychology*, 47, 403–413.
- HAWTON, K., FAGG, J., SIMKIN, S., BALE, E., & BOND, A. (1997). Trends in deliberate self-harm in Oxford, 1985–1995. *British Journal of Psychiatry*, 171, 556–560.
- KAHAN, J., & PATTISON, E. M. (1984). Proposal for a distinctive diagnosis: The deliberate self-harm syndrome (DSH). *Suicide and Life-Threatening Behavior*, 14, 17–35.
- LEWINSON, P. M., RHODE, P., & SEELEY, J. R. (1996). Adolescent suicidal ideation and attempts: Prevalence, risk factors, and clinical implications. *Clinical Psychology: Science and Practice*, 3, 25–46.
- LINEHAN, M. M. (2000). Behavioral treatments of suicidal behaviors: Definitional obfuscation and treatment outcomes. In R. W. Maris, S. S. Cannetto, J. L. McIntosh, & M. M. Siverman (Eds.), *Review of suicidology* (pp. 84–111). New York: Guilford.
- MARTIN, G., ROZANES, P., PEARCE, C., & ALLISON, S. (1995). Adolescent suicide, depression, and family dysfunction. *Acta Psychiatrica Scandinavica*, 92, 336–344.
- MENNINGER, K. (1938). *Man against himself*. New York: Harcourt Brace World.
- O'CARROLL, P. W., BERMAN, A. L., MARIS, R. W., MOSCICKI, E. K., TANNEY, B. L., & SILVERMAN, M. M. (1996). Beyond the tower of Babel: A nomenclature for suicidology. *Suicide and Life-Threatening Behavior*, 26, 237–252.
- ORBACI, I., MILSTEIN, I., HAR-EVEN, D., APTER, A., TYANO, S., & ELIZUR, A. (1991). A multi-attitude suicide tendency scale for adolescents. *Psychological Assessment*, 3, 398–404.
- OSMAN, A., BARRIOS, F. X., PANAK, W. F., OSMAN, J. R., HOFFMAN, J., & HAMMER, R. (1994). Validation of the Multi-Attitude Suicide Tendency Scale in adolescent samples. *Journal of Clinical Psychology*, 50, 847–855.
- OSMAN, A., GILPIN, A. R., PANAK, W. F., KOPPER, B. A., BARRIOS, F. X., GUTIERREZ, P. M., & CHIROS, C. E. (2000). The Multi-Attitude Suicide Tendency Scale: Further validation with adolescent psychiatric inpatients. *Suicide and Life-Threatening Behavior*, 30, 377–385.
- PATTISON, E. M., & KAHAN, J. (1983). The deliberate self-harm syndrome. *American Journal of Psychiatry*, 140, 867–872.
- PATTON, G. C., HARRIS, R., CARLIN, J. B., HIBBERT, M. E., COFFEY, C., SCHWARTZ, M., & BOWES, G. (1997). Adolescent suicidal behaviors: A population-based study of risk. *Psychological Medicine*, 27, 715–724.
- PINTO, A., WHISMAN, M. A., & MCCOY, K. J. M. (1997). Suicidal ideation in adolescents: Psychometric properties of the Suicidal Ideation Questionnaire in a clinical sample. *Psychological Assessment*, 9, 63–66.
- RANGE, L. M., & KNOTT, E. C. (1997). Twenty suicide assessment instruments: Evaluation and recommendation. *Death Studies*, 21, 25–58.
- REYNOLDS, W. M. (1987). *Reynolds Adolescent Depression Scale: Professional manual*. Odessa, FL: Psychological Assessment Resources, Inc.
- REYNOLDS, W. M. (1988). *Suicide Ideation Questionnaire: Professional manual*. Odessa, FL: Psychological Assessment Resources, Inc.
- REYNOLDS, W. M., & MAZZA, J. J. (1998). Reliability and validity of the Reynolds Adolescent Depression Scale with young adolescents. *Journal of School Psychology*, 36, 295–312.
- ROSS, S., & HEATH, N. (2002). A study of the frequency of self-mutilation in a community sample of adolescents. *Journal of Youth and Adolescence*, 31, 67–77.
- ROSS, R. R., & MCKAY, H. B. (1979). *Self-mutilation*. Lexington, MA: Lexington Books.
- SIMEON, D., & FAVAZZA, A. R. (2001). Self-injurious behaviors: Phenomenology and assessment. In D. Simeon & E. Hollander (Eds.), *Self-injurious behaviors: Assessment and treatment* (pp. 1–28). Washington, DC: American Psychiatric Press.
- STANLEY, B., GAMEROFF, M. J., VENEZIA, M., & MANN, J. (2001). Are suicide attempters who

self-mutilate a unique population? *The American Journal of Psychiatry*, 158, 427–432.

STANLEY, B., WINCHEL, R., MOLCHIO, A., SIMEON, D., & STANLEY, M. (1992). Suicide and the self-harm continuum: Phenomenological and biochemical evidence. *International Review of Psychiatry*, 4, 149–155.

VALENTINER, D. P., GUTIERREZ, P. M., & BLACKER, D. (2002). Anxiety measures and their

relationship to adolescent suicidal ideation and behavior. *Journal of Anxiety Disorders*, 16, 11–32.

WALSH, B. W., & ROSEN, P. M. (1988). *Self-mutilation: Theory, research, and treatment*. New York: Guilford.

Manuscript Received: October 16, 2002

Revision Accepted: June 30, 2003